

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A non-naturally occurring glycolipopeptide comprising at least five amino acids, at least one amino acid being a glycosylated amino acid and at least one amino acid being a lipidated amino acid, where at least one lipidated amino acid is an interior amino acid, said glycolipopeptide comprising at least two MUC 1 ~~peptide~~ epitopes each comprising the amino acid sequence P(D/E) (A/G/T/S) (R/K/H) P, ~~said MUC peptide epitope comprising:~~ and wherein

~~—a first i) at least one~~ MUC peptide epitope with comprising the amino acid sequence P(D/E) (A/G/T/S) (R/K/H) P which comprises at least one glycosylated amino acid, and

~~—a second ii) at least one~~ MUC peptide epitope of comprising the amino acid sequence P(D/E) (A/G/T/S) (R/K/H) P which comprises only unglycosylated amino acids, wherein the ~~first and second amino acid sequences of said at least two~~ MUC1 epitopes may be the same or different.

2. (Currently Amended) The glycolipopeptide of claim 1 ~~where at least one epitope is a~~ which further comprises at least one cancer-associated epitope other than a MUC1 peptide epitope.

3-7 (Cancelled).

8. (Previously Presented) The glycolipopeptide of claim 1 which comprises at least one T cell epitope.

9. (Cancelled)

10. (Previously Presented) The glycolipopeptide of claim 1 which comprises at least one MUC1 B cell peptide epitope and at least one MUC1 T cell peptide epitope.

11. (Currently Amended) The ~~glycopeptide~~ glycolipopeptide of claim 1 which comprises the amino acid sequence PDTRP (AAs 6-10 of SEQ ID NO:10).

12. (Original) The glycolipopeptide of claim 11 which comprises the amino acid sequence SAPDTRP (AAs 4-10 of SEQ ID NO:10).

13. (Previously Presented) The glycolipopeptide of claim 1 which comprises at least one copy of (a) the MUC1 consensus tandem repeat

GVTSAPDTRPAPGSTAPPAH (SEQ ID NO:10),

(b) a cyclic permutation thereof, or (c) a sequence substantially identical to (a) or (b) above.

14. (Original) The glycolipopeptide of claim 13 which comprises at least two copies of (a), (b) or (c).

15. (Previously Presented) The glycolipopeptide of claim 1 where at least one glycosylated amino acid is O-glycosylated.

16. (Previously Presented) The glycolipopeptide of claim 1 where at least one glycosylated amino acid is N-glycosylated.

17. (Previously Presented) The glycolipopeptide of claim 1 where at least one glycosylated amino acid is S-glycosylated.

18. (Previously Presented) The glycolipopeptide of claim 1 which comprises a tumor-associated carbohydrate epitope.

19. (Original) The glycolipopeptide of claim 18 where the carbohydrate epitope is GalNAc (Tn).

20. (Original) The glycolipopeptide of claim 18 where the carbohydrate epitope is sialyl Tn.

21. (Original) The glycolipopeptide of claim 18 where the carbohydrate epitope is Gal-GalNAc (TF).

22. (Original) The glycolipopeptide of claim 11 where the

threonine of PDTRP is glycosylated.

23. (Original) The glycolipopeptide of claim 22 where the threonine of PDTRP is O-linked to Tn.

24. (Previously Presented) The glycolipopeptide of claim 1 where at least two amino acids are glycosylated.

25. (Cancelled).

26. (Previously Presented) The glycopeptide of claim 1 in which at least two amino acids are lipidated.

27. (Previously Presented) The glycolipopeptide of claim 1 in which at least two interior amino acids are lipidated.

28. (Previously Presented) The glycolipopeptide of claim 1 in which all of the lipidated amino acids are interior amino acids.

29. (Previously Presented) The glycolipopeptide of claim 1 characterized by a carboxy terminal sequence SSL, where each of the serines is lipidated.

30. (Previously Presented) The glycolipopeptide of claim 1 in which there are not more than 200 amino acids.

31. (Previously Presented) The glycolipopeptide of claim 1 in which there are not more than 50 amino acids.

32. (Previously Presented) The glycolipopeptide of claim 1 wherein at least one lipidated amino acid comprises a strongly lipophilic group comprising at least 6 atoms other than hydrogen.

33. (Previously Presented) The glycolipopeptide of claim 1 wherein at least one lipidated amino acid comprises a strongly lipophilic group comprising at least 11 atoms other than hydrogen.

34. (Previously Presented) The glycolipopeptide of claim 1 wherein at least one lipidated amino acid comprises a strongly lipophilic group comprising at least 13 atoms other than hydrogen.

35. (Previously Presented) The glycolipopeptide of claim 1 wherein at least one lipidated amino acid comprises a strongly lipophilic group comprising at least 21 atoms other than hydrogen.

36. (Currently Amended) The glycolipopeptide of claim 1 where said lipidated amino acid is lipidated with a strongly lipophilic group which consists of not more than 100 atoms other than hydrogen.

37. (Currently Amended) The glycolipopeptide of claim 1 where said lipidated amino acid is lipidated with a strongly lipophilic group which consists of not more than 40 atoms other than hydrogen.

38. (Currently Amended) The glycopeptide of claim 1 in which at least one lipidated amino acid is lipidated with a strongly lipophilic group of~~at least one lipidated amino acid~~ which has a logP, as predicted by the Meylan algorithm of at least 2.7.

39. (Original) The glycopeptide of claim 38 where said predicted logP is at least 3.

40. (Original) The glycopeptide of claim 38 where said predicted logP is at least 4.

41. (Original) The glycopeptide of claim 38 where said predicted logP is at least 5.

42. (Original) The glycopeptide of claim 38 where said predicted logP is at least 6.

43. (Original) The glycopeptide of claim 38 where said predicted logP is at least 7.

44. (Original) The glycopeptide of claim 38 where said predicted logP is at least 8.

45. (Original) The glycopeptide of claim 38 where said predicted logP is at least 9.

46. (Original) The glycopeptide of claim 38 where said predicted logP is at least 10.

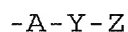
47. (Previously Presented) The glycolipopeptide of claim 1 in which the amino terminal amino acid comprises a strongly lipophilic group.

48. (Previously Presented) The glycolipopeptide of claim 1 in which the carboxy terminal amino acid comprises a strongly lipophilic group.

49. (Previously Presented) The glycolipopeptide of claim 1 in which at least one lipidated amino acid is selected from the group consisting of lipidated Ser, Thr, Asp, Glu, Cys, Tyr, Lys, Arg, Asn or Gln.

50. (Original) The glycolipopeptide of claim 49 where the lipidated amino acid is lipidated Ser or Thr.

51. (Previously Presented) The glycolipopeptide of claim 1 where at least one lipidated amino acid comprises a side chain of the formula



where A is optional but, if present, is an organic group of not more than 12 atoms other than hydrogen;
Y is a spacer of not more than 12 atoms other than hydrogen, and comprising nitrogen, oxygen, sulfur or phosphorous, and Z is a strongly lipophilic group.

52. (Original) The glycolipopeptide of claim 51 in which A, if present, is an alkyl of 1-4 carbon atoms.

53. (Original) The glycolipopeptide of claim 52 in which A is present and is $-CH_2-$ or $-CH(CH_3)-$.

54. (Previously Presented) The glycolipopeptide of claim 1 in which Y comprises a group selected from the group consisting of $-O-$, $-S-$, $-NH-$, $-NR-$, $-PO_4-$, $-C(=O)-$, $-C(=S)-$, $-C(=NH)-$, and $-C(=NR)-$, where R is 1-4 alkyl.

55. (Original) The glycolipopeptide of claim 54 in which Y is -NHCO-, -OCO- or -SCO-.

56. (Original) The glycolipopeptide of claim 54 in which Y is -CONH- or -CH₂NH-.

57. (Original) The glycolipopeptide of claim 54 in which Y is -O-, -S- or -NH-.

58. (Previously Presented) The glycolipopeptide of claim 51 in which -Y-Z is itself a strongly lipophilic group.

59. (Original) The glycolipopeptide of claim 58 in which A is present and -A-Y-Z is itself a strongly lipophilic group.

60. (Previously Presented) The glycolipopeptide of claim 51 in which Z is at least partially aromatic.

61. (Previously Presented) The glycolipopeptide of claim 51 in which Z is aliphatic.

62. (Currently Amended) The glycolipopeptide of claim 51 in which Z comprises at least one moiety of the form -A'-Y'-Z', ~~where A', Y' and Z' are defined analogously to A, Y and Z, respectively~~ where A' is optional but, if present, is an organic group of not more than 12 atoms other than hydrogen; Y' is a spacer of not more than 12 atoms other than hydrogen, and comprising nitrogen, oxygen, sulfur or phosphorous, and Z' is a strongly lipophilic group.

63. (Original) The glycolipopeptide of claim 62 where Y' is -O- and Z' is an alkyl group.

64. (Original) The glycolipopeptide of claim 63 where A is -(CH₂)_i-, where i is 0 or 1, or Z' is -(CH₂)_jCH₃, where j is 6 to 26.

65. (Previously Presented) The glycolipopeptide of claim 62 in which Z comprises -B(-Y'-Z')_n, in which B is a branched organic group of not more than 12 atoms than hydrogen, each Y' is an independently chosen spacer of not more than 12 atoms other

than hydrogen, and comprising nitrogen, oxygen, sulfur or phosphorous, and each Z' is an independently chosen strongly lipophilic group, and n is at least two.

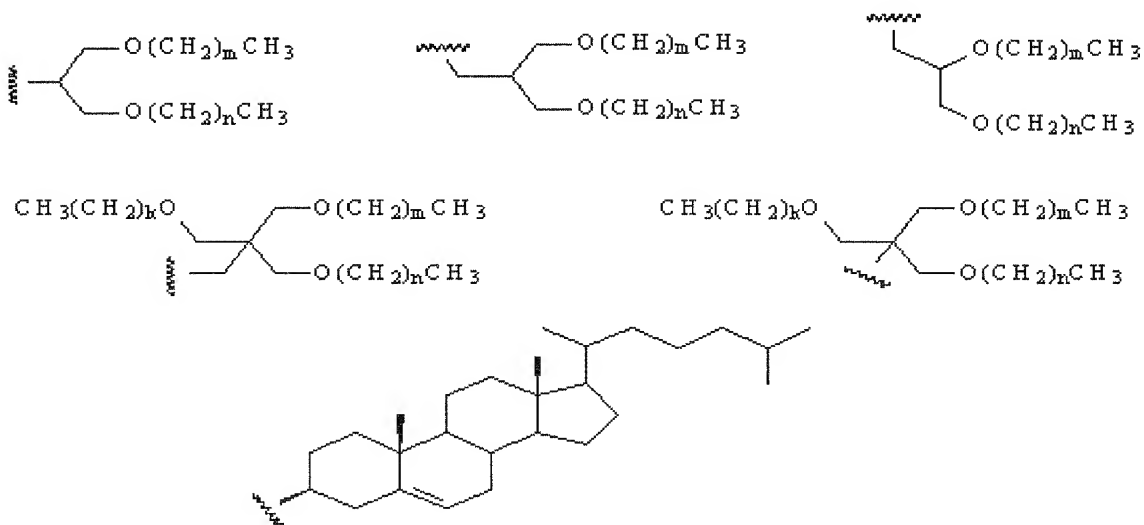
66. (Original) The glycolipopeptide of claim 65 in which n is 2 or 3.

67. (Previously Presented) The glycolipopeptide of claim 65 in which each Y' is -O- and each Z' independently is $-(CH_2)_jCH_3$, where j=6 to 26.

68. (Original) The glycolipopeptide of claim 67 in which n=2 and B is $-CH(CH_2-)_2$.

69. (Original) The glycolipopeptide of claim 67 in which n=2 and B is $-C(CH_2-)_3$.

70. (Currently Amended) The glycolipopeptide of claim 1 where ~~the strongly lipophilic group of~~ at least one lipidated amino acid is lipidated with a strongly lipophilic group which comprises at least one of the following structures:



TSAPDTRPAPGSTAPP AHGVTSAPDTRPAPGSTAPP AHGVLipidsL

79. (Original) The composition of claim 78 which comprises

cholesterol.

80. (Original) The composition of claim 79 which comprises phosphatidyl glycerol.

81. (Withdrawn) A method of eliciting an immune response which comprises administering an effective amount of a composition according to claim 77 to a subject.

82-86. (Cancelled)

87. (Currently Amended) The glycolipopeptide of claim 1 which comprises at least two copies of the amino acid sequence PDTRP (AAs 6-10 of SEQ ID NO:10).

88. (Currently Amended) The glycolipopeptide of claim ~~87~~ 1 which comprises at least two copies of the amino acid sequence SAPDTRP (AAs 4-10 of SEQ ID NO:10).

89. (Cancelled)

90. (Currently Amended) The glycolipopeptide of claim ~~89~~ 13 which comprises at least two copies of (a), (b) or (c).

91-133. (Cancelled)

134. (Withdrawn - Currently Amended) The ~~method~~ glycolipopeptide of claim 1 wherein, in each P(D/E) (A/G/T/S) (R/K/H)P epitope, the (D/E) is D.

135. (Withdrawn - Currently Amended) The ~~method~~ glycolipopeptide of claim 1 wherein, in each P(D/E) (A/G/T/S) (R/K/H)P epitope, the (A/G/T/S) is T or S.

136. (Withdrawn - Currently Amended) The ~~method~~ glycolipopeptide of claim 1 wherein, in each P(D/E) (A/G/T/S) (R/K/H)P epitope, the (A/G/T/S) is T.

137. (Withdrawn - Currently Amended) The ~~method~~ glycolipopeptide of claim 1 wherein, in each P(D/E) (A/G/T/S) (R/K/H)P epitope, the (R/K/H[[/]]) is R.

138. (Currently Amended) The glycolipopeptide of claim 1 wherein each P(D/E) (A/G/T/S) (R/K/H)P ~~epitope~~ is P(D/E) (T/S)RP.

139-140. (Cancelled)

141. (New) The glycolipopeptide of claim 1 which comprises amino acids 1-40 of SEQ ID NO:2.

142. (New) The glycolipopeptide of claim 141 which further comprises two or more consecutive lipidated amino acids connected to the C-terminal of amino acids 1-40 of SEQ ID NO:2.

143. (New) The glycolipopeptide of claim 142 which further comprises a C-terminal lysine.

144. (New) The glycolipopeptide of claim 143 which consists of 43 amino acids.

145. (New) The glycolipopeptide of claim 141 in which Ser-12, Thr-13 and Thr-26 are glycosylated.

146. (New) The glycolipopeptide of claim 145 in which Ser-21 is glycosylated.

147. (New) The glycolipopeptide of claim 145 in which Ser-12, Thr-13 and Thr-26 are glycosylated with Tn.

148. (New) The glycolipopeptide of claim 146 in which Ser-22 is glycosylated with sialyl-Tn.

149. (New) the glycolipopeptide of claim 1, wherein the amino acids are arranged in a linear sequence of amino acids.

150. (New) The glycolipopeptide of claim 1 wherein the lipidated amino acid is not Cys lipidated with (Pam)₃.